

Tennessee Gas Pipeline Company

Docket No. SEC 2008-_____

**Application of Tennessee Gas Pipeline Company
For a Certificate of Site and Facility
For the Concord Lateral Expansion Project**

EXHIBIT E

Site Specific Alteration of Terrain Permit

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SECTION I

ALTERATION OF TERRAIN APPLICATION FORM

ALTERATION OF TERRAIN APPLICATION
R.S.A. 485-A:17
Department of Environmental Services - Water Division
29 Hazen Drive, PO Box 95
Concord, New Hampshire 03302-0095

Application Date: April 2008

File Number (DES use): _____

CONCORD EXPANSION PROJECT

Name of Project

PELHAM, NH

Location of Project (town)

Map & Lot Number

HILLSBOROUGH

County

1. TENNESSEE GAS PIPELINE COMPANY

Name of Owner

HAROLD MC CRACKEN

Contact Name

P.O. BOX 2511

Mailing Address

HOUSTON

City/Town

(713)-420-5248

Telephone Number

Fax Number

TX

77001-2511

State

Zip Code

2.

Desired Permit Holder Name (if different from applicant)

Contact Name

Telephone Number

Mailing Address

Fax Number

City/Town

State

Zip Code

3. ENSR

Engineering Company

JOHN ZIMMER

Contact Name

95 STATE ROAD

Mailing Address

SAGAMORE BEACH

City/Town

JZIMMER@ENSR.AECOM.COM

Engineer's email address

508-888-3900 EXT. 226

Telephone Number

508-888-6689

Fax Number

MA

02562

State

Zip Code

4. Describe the project briefly and answer questions below:

Tennessee Gas Pipeline Company ("Tennessee") is proposing to construct a new natural gas compressor station in Pelham, NH that will require clearing of approximately 6.8 acres. of wooded uplands. The compressor station will be situated adjacent to Tennessee's existing natural gas pipelines, and will be operated and maintained by Tennessee.

Total Area of Disturbance: 296,208 square feet

Number of Lots Proposed: NA

Total Wetland Impact: 0 square feet

Total Length of Roadway: 1000 feet

Total Impervious Cover: 2,600 square feet

Water Supply Engineering approval needed? YES ☐ NO ☒

5. To complete application, attach the following:

- ☒ Application Fee (Effective July 1, 2007, see www.des.nh.gov/AoT/FeeSchedule.htm)
- ☒ USGS Map (1" = 2,000' scale with the site boundaries outlined)
- ☒ One Set of Design Plans
- ☐ One Copy of the Drainage Report
- ☒ A Completed "Shoreland Protection Certification" (see reverse side of this application)

Signature (owner or agent) and Date

Last revised: July 2007

Name (owner or agent)

Shoreland Protection Certification

The New Hampshire Shoreland Protection Act (RSA 483-B) requires that applicants for environmental permits which involve work in the shoreland area "demonstrate to the satisfaction of the department (of environmental services) that the proposal meets or exceeds the development standards of this chapter." The certification contained here in is an acceptable vehicle for such a demonstration when submitted with an environmental permit application.

The protected shoreland is defined to be all land located within 250 feet of a reference line. The reference line means:

- (a) For natural fresh water bodies without artificial impoundments, the natural mean high water level as determined by the division of water resources of the department.
- (b) For artificially impounded fresh water bodies, the waterline at full pond as determined by the elevation of the top of the impoundment structure.
- (c) For coastal waters, the highest observable tide line, which means a line defining the furthest landward limit of tidal flow, not including storm events, which can be recognized by indicators such as the presence of a strand line of flotsam and debris, the landward margin of salt tolerant vegetation, or a physical barrier that blocks further flow of the tide.
- (d) For rivers, the ordinary high water mark.

In the case of rivers, the law applies to all fourth order or higher streams of the state with the exception of rivers or river segments designated for management and protection under RSA 483 prior to January 1, 1993. Lists of fourth order and higher streams and river segments designated under RSA 483 are available at no cost from the Department of Environmental Services.

Statement of Compliance

- 1) Will the project for which a permit is hereby requested involve construction, land clearing, or other development within the protected shoreland as defined above? Answer yes or no. Answer NO
- 2) If the project involves construction, land clearing, or other development within the protected shoreland, will it meet or exceed the development standards of RSA 483-B? Answer yes, or not applicable. Answer NA

If not applicable, state why 1.

(Note, the development standards are not applicable in only three situations: (1) the project is not located in the shoreland zone, (2) the activities are exempted under section 483-B:9, V or section 483-B:19 of the Act, or (3) the Commissioner of the Department of Environmental Services has granted a variance from a specific standard.)

Certification

As owner or agent for the owner of the subject property, by my signature below, I certify that:

- (a) My responses to questions 1 and 2 above are correct to the best of my knowledge,
- (b) I am familiar with the requirements of RSA 483-B and have knowledge of the development activities which will be undertaken,
- (c) The plans and other information submitted with this permit application provide a complete description of the project and demonstrate how compliance will be accomplished, and
- (d) I understand that false information given in this certification may result in revocation of any permit granted by the Department of Environmental Services as a result of this application, liability for remediation or restoration of the land affected, fines up to \$20,000 for each day of continuing violation, imprisonment or other penalties.

Certified by John Zimmer
Name (print or type) JOHN ZIMMER
Indicate whether owner or agent AGENT

Date 4/14/08

SECTION II

***REVIEW CHECKLIST FOR COMPLETING AN
ALTERATION OF TERRAIN APPLICATION FORM***

REVIEW CHECK LIST FOR COMPLETING AN ALTERATION OF TERRAIN APPLICATION

Application and Processing

- ☒ Is the application form complete and signed?
- ☒ Is the Shoreland certification signed? Question #2 often goes unanswered. Is this question answered?
- ☒ Did you clearly note the area of disturbance in question #4 on the application?
- ☒ If the applicant is an LLC, Trust, School etc. did you provide a contact name on the application?
- ☒ Is the correct fee included (see www.des.nh.gov/AoT/FeeSchedule.htm)? The fee schedule was revised on July 1, 2007.
- ☒ Did you include a 1:24000 scale USGS map on an 8 1/2" by 11" with the site boundaries outlined?

On plans

- ☒ Is the wetland delineation shown on the plans?
- ☒ Are all temporary erosion control measures shown on the plans?
- ☒ How is the stormwater runoff from impervious surfaces (including roof runoff) being treated?
- ☒ Are the pre existing contours shown?
- ☒ Are the proposed 2' contours shown?
- ☐ Are there drainage easements protecting the drainage/treatment structures?
- ☒ Are the plans stamped by a PE?
- ☐ If there are Shoreland issues, are they in compliance with RSA 483-B (For more information on Shoreland Protection visit www.des.nh.gov/cspa)?
- ☐ If the project is within the protected Shoreland, are the buffer lines shown on the plans (Limits within the Protected Shoreland are listed at www.des.nh.gov/factsheets/sp-sp-6.htm)?
- ☐ If the project is within the protected Shoreland, has the Shoreland Zone Worksheet been completed (Download the worksheet at www.des.nh.gov/cspa/download.htm)
- ☐ Are there wetland issues that should be addressed (e.g. detention in wetlands)?

Construction Sequence/Erosion Control Notes

- ☒ Are the perimeter controls noted to be installed prior to earth moving operations?
- ☒ Are the detention basins and swales noted to be installed early on in the construction sequence (before rough grading the site)?
- ☒ Is it noted that all ditches and swales shall be stabilized prior to directing runoff to them?
- ☒ Are all roadways and parking lots noted to be stabilized within 72 hours of achieving finished grade?
- ☒ Are all cut and fill slopes noted to be seeded/loamed within 72 hours of achieving finished grade?
- ☒ Are all erosion controls noted to be inspected weekly AND after every 0.5" of rainfall?
- ☒ Is the area of disturbance limited? For example note on the plans that *the smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized* or submit a detailed phasing and monitoring plan.
- ☒ Is the word "stable" clearly defined? For example, *An area shall be considered stable if one of the following has occurred:*
 - ☐ Base course gravels have been installed in areas to be paved;
 - ☐ A minimum of 85% vegetated growth has been established;
 - ☐ A minimum of 3" of non-erosive material such stone or riprap has been installed; or
 - ☐ Erosion control blankets have been properly installed.
- ☐ Is there a limit on the length of time of exposure (i.e. all areas shall be stabilized within 45 days of initial disturbance.)?

- ☒ Are the temporary and permanent seeding specifications provided? (Reed Canary grass is listed in the Green Book; however, this is a problematic species according to the Wetlands Bureau and therefore should not be specified).
- ☒ Are winter notes provided and do they meet or exceed our standards?

WINTER NOTES

- o All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;
- o All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and
- o After November 15th, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.

Are the following details on the plans?

- ☒ Typical roadway x-section
- ☒ Detention basin with inverts noted on the outlet structure
- ☒ Level spreader with the proper configuration (i.e. does the configuration depicted match that proposed?) Stone berm level spreader preferred.
- ☒ Outlet protection – riprap aprons
- ☐ A general installation detail for an erosion control blanket (slopes greater than 3:1 may not be proposed on the plans however, they may be needed during winter construction on unfinished slopes).
- ☒ Silt fences or mulch berm
- ☒ Storm drain inlet protection – note that since hay bales must be embedded 4" into the ground, they are not to be used on hard surfaces such as pavement.
- ☒ Hay Bale barriers
- ☐ Stone check dams
- ☒ Gravel Construction Entrance/Exit
- ☐ Vegetative Filter Strip – man made and/or natural
- ☒ Vegetated treatment swales
- ☒ Innovative BMPS

In Drainage Report

- ☒ Have you provided a comprehensive project narrative, including a discussion of 2 and 10 year peak flows off-site?
 - ☒ Have you provided the soils map? Watershed should be outlined and if not all one soil type, this map should be shown on the detailed sub-watershed maps.
 - ☒ Have you compared the pre-development and post-development 2 & 10 year flows - If proposing an increase, discuss the effects.
 - ☒ Have you provided a watershed map that can easily be read?
 - ☒ Are all the subcatchments, reaches, and ponds labeled?
- Does the map show: ☒ Tc lines
☒ Soils lines

- ☒ A clear delineation of the sub-catchment boundaries
- ☒ Roadway station numbers
- ☒ Culverts and other conveyance structures
- ☒ Do the CN values make sense? Common errors:
 - Soils types don't match the soils map provided
 - There is more A soil in the post-development
 - There are more woods in the post-development
 - Fair or poor conditions have been selected for land cover for undeveloped sites without justification. All undeveloped areas in NH are typically in good condition.
- ☒ Have you checked the storage input used to model the ponds?
- ☐ Do artificial berms pass the 50-year storm (i.e. make sure the constructed berms on ponds are not overtopped).
- ☐ Do the ponds need state Dam permits (www.des.nh.gov/Dam/damdef.pdf)
- ☒ Does the outlet structure proposed match that modeled in the drainage analysis?
- ☒ In the drainage analysis, check to make sure that your peak flow rate is less than the capacity of the reach. If not the reach may need to be modeled as a pond (i.e. reaches only apply open channel flow calculations, if you have a culvert as a reach and it is over capacity then it needs to be modeled as a pond to apply open channel flow and pressure calculations).
- ☐ Is benching needed (i.e. benching is typically needed if you have more than 20 feet change in elevation on a 2:1 slope, 30' change in elevation on a 3:1 slope, 40' change in elevation on a 4:1 slope)?
- ☒ Have you checked the impervious areas used in the pre-development and post-development? A good check is to subtract the total impervious area used in the pre analysis from the total impervious area used in the post-analysis, does this number make sense? For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses/units proposed. Does this number make sense?
- ☒ Are the total areas in the pre and post analyses the same?
- ☒ Is the rainfall amount and SCS storm type correct?
- ☒ Are the riprap sizing calculations in the report?

Treatment – as applicable

- ☒ Does the treatment swale have less than 1 fps and less than 10 cfs discharging to it?
- ☒ Does the treatment swale configuration (length, side slopes, longitudinal slope, etc) in the analysis match that proposed on the plans?
- ☐ Did you make sure that the level spreader length is not more than 0.5 cfs per foot of level spreader length during the 2-year storm (i.e if the 2 year storm peak discharge to the level spreader is 6 cfs, is the lip at least 12 feet long?) and that the lip is at least 5 feet long but no longer than 50 feet.
- ☐ For earthen level spreaders, is the entry channel into the level spreader at < 1% for the last 50' prior to entering the level spreader? For stone lined (preferred), is the entry channel into the level spreader at < 1% for the last 20' prior to entering the level spreader? For a plunge pool design level spreader (i.e. a plunge pool with a level lip) no design restrictions are placed on the diversion channel.
- ☐ Does the level spreader discharge to a filter strip that is less than 15% slope and at least 75 feet long before directing stormwater to a wetland or surface water?
- ☒ Do you have adequate detention during a 2-year storm to meet a plug flow of greater than 240 min?
- ☐ Did you provide infiltration testing for the soils at the location of the infiltration basin?
- ☐ Does the infiltration basin function during frozen conditions (i.e. is your infiltration rate conservative enough or do you have a gravel curtain to allow infiltration during the winter).
- ☐ Does the infiltration basin have pretreatment (sediment forebay, sheet flow, mechanical unit, etc).
- ☒ If proposing other methods have you reviewed the rules (Env-Ws 415.12) to make sure that they meet all design requirements?

SECTION III
PROJECT NARRATIVE

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1.0 INTRODUCTION

Tennessee Gas Pipeline Company ("Tennessee") is filing an Alteration of Terrain Application with the New Hampshire Department of Environmental Services ("NHDES") for the proposed construction of the Compressor Station 270B1 located in Pelham, Hillsborough County, New Hampshire. The proposed facility is part of the Concord Expansion Project ("Project") located in Hillsborough and Merrimack Counties, New Hampshire to deliver 30,000 dekatherms per day ("Dth/d") of firm natural gas transportation service to Energy North Natural Gas, Inc., d/b/a/ KeySpan Energy Delivery New England ("Energy North"). To accommodate the incremental 30,000 Dth/d of capacity, Tennessee will also modify piping at its existing Laconia Meter Station in Concord, Merrimack County, New Hampshire. The anticipated in-service date is November 2009. This permit application pertains solely to Compressor Station 270B1 and identifies the following:

- The location of the proposed facility
- The purpose and need for the proposed facility
- Alternatives to the proposed facility
- Environmental constraints associated with the project
- Land requirements associated with construction and operation of the compressor station
- Operation and maintenance procedures for the compressor station

1.1 COMPRESSOR STATION 270B1

1.1.1 Purpose and Need

Tennessee, a subsidiary of El Paso Corporation, is a major supplier of natural gas to utilities and power generators in the northeast, plans to add a new compressor station in Pelham, New Hampshire, to increase the capacity of its existing Line 270B-100. The new compression will create an additional 30,000 Dth/d of capacity from Dracut, Massachusetts, to Laconia, New Hampshire, providing incremental natural gas transportation to Energy North's customers and New Hampshire citizens in a safe and reliable manner.

2.0 ALTERNATIVES ANALYSIS

2.1 NO ACTION ALTERNATIVE

Under the No-Action Alternative, Tennessee would not construct the new Compressor Station 270B1. Accordingly, the No-Action Alternative would avoid the environmental impacts associated with construction and operation of the currently proposed Project. However, by not constructing the proposed Project, Tennessee's ability to provide the necessary transportation capacity required to supply its increased customer base would be limited. Other natural gas transmission companies would most likely be required to increase their capacity and construct new facilities to meet the demand for the additional capacity. Such actions would likely result in

the transference of impacts from one location to another but would not eliminate or reduce impacts altogether.

If existing natural gas transmission systems are not enhanced or expanded, there may be energy shortages in times of peak demand or users may revert to the consumption of alternative fuels including oil and coal. Utilization of natural gas as the primary fuel offers the best alternative in terms of availability with the lowest environmental impact of available energy sources, particularly in regards to air quality impacts. Existing natural gas delivery systems can be readily expanded to meet increased demand with minimal impact on the environment.

The No-Action Alternative was not found to be a feasible alternative because it did not satisfy the purpose and need for the Project.

2.2 SYSTEM ALTERNATIVES

System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed natural gas pipeline systems or existing compression to meet the stated purpose and need. System options involve the transportation of the equivalent amount of incremental natural gas volumes by the expansion of existing pipeline systems or by the construction and operation of other new pipeline systems. A viable system alternative would make it unnecessary to construct all or part of the proposed Project, although some modifications or additions to existing pipeline or construction of entirely new pipeline system could be required to allow for the transportation of the additional natural gas.

The system alternatives that Tennessee considered consisted of the following:

- Other Natural Gas Transmission Systems
- Pipeline Looping
- Pipeline Looping with Additional Compression

None of the above mentioned system alternatives would meet the needs of its customer without imposing greater impacts to the environment as well as to land owners. Tennessee prefers the proposed Project because it optimizes gas transmission capacities on its own system with minimal infrastructure development and environmental impacts; thereby meeting Tennessee's Project and planning objectives in the most cost-efficient manner.

2.3 SITE ALTERNATIVES

Alternatives to the existing Tennessee system were evaluated to effectuate the delivery of the specified natural gas volumes for this Project. The system flow analysis conducted for the Project determined that the overall optimal system design would include a new compressor station adjacent to the existing Tennessee 200 Line on the property owned by Tennessee in Pelham, New Hampshire. Utilizing this property avoids impacts to wetlands, watercourses and significant wildlife habitats. Constructing compression facilities at the Pelham site was determined to be the preferred alternative to minimize environmental and community impacts as opposed to constructing additional pipeline looping along the existing Tennessee 200 Line.

2.3.1 Alternative Compressor Station Sites

Tennessee conducted a hydraulic analysis to determine the optimum horsepower and compression in order to provide increased volumes necessary to meet subscriber demands. As a result, Tennessee identified the need for one new compressor station (Compressor Station 270B1) to meet the compression needs for the increased delivery volume.

For this Project, the following limiting factors dictated selecting a property for use as the new compressor station site:

- Engineering Design & Construction: The new compressor station needs to be sited near the midpoint of Tennessee's 270 Line in Hillsborough or Rockingham County, New Hampshire which is approximately the location of Tennessee's existing mainline valve ("MLV") 270B1-104 near Windham, New Hampshire. Several engineering design and construction issues were evaluated for selection of a preferred site, including facility and workspace requirements, site evaluation, road access and length of interconnecting pipe between the new facility with Tennessee's existing pipeline:
- Pipeline design limitations – Tennessee used an approximate 3.5-mile south and 5-mile north distance from MLV 270B1-104 to identify a new compressor station property;
- Land / workspace requirements – Tennessee undertook a detailed analysis to select a 10 to 20 acre property for a site to install the new Compressor Station 270B1;
- Site elevation – Tennessee sought out land parcels featuring topography that minimizes the extent of fill or excavation of soil required during construction of the new facility, including workspace needs;
- Road access – Tennessee sought to maximize proximity of the new compressor station to the nearest public road, thereby minimizing the need for a new access road as well as modifications or improvements to existing roads;
- Interconnecting pipe –To minimize the impact on the surrounding community, Tennessee favored siting the new compressor station site on a property that would not require a pipeline extension for the suction and discharge piping. This approach also minimizes the land requirements for the project, thereby minimizing the number of impacted property owners.
- Land Availability: Hillsborough County is a mix of urban and rural setting. The landowners within this area typically own lot-sized property or small tracts of land. Land availability was limited in this area based on the general lack of tracts of land that would be suitable for a compressor station installation.
- Environmental Impacts: Environmental parameters for the alternative sites were evaluated based on a combination of field reconnaissance and available desktop resources such as 7.5-minute United States Geological Survey ("USGS") topographic maps, aerial photography, and available literature on environmental resources. Several environmental characteristics were evaluated using these resources, including:

- Soils, including presence of prime farmland;
- Federally and state-listed threatened and endangered species; and
- Cultural resource sites listed or eligible for listing on the National Register of Historic Places.
- Zoning: Land currently zoned as industrial was preferred as compared to commercial or residential.

Three locations were identified that would be suitable for siting the new Compressor Station 270B1, namely the preferred site, North Pelham Property, and two alternative sites (see Section IV – Figure 10-1).

2.3.1.1 Preferred Site – North Pelham Property

The preferred site is located to the west of State Highway 128 north of Industrial Park Road. The North Pelham Property features the following characteristics:

- Tennessee's existing pipeline system crosses the western portion of this site. MLV 270B1 is located approximately one mile north of this site;
- The site will require grading prior to construction of the compressor. The civil work will be planned to balance the cut and fill requirements to minimize the impact associated with having excessive soil materials remaining from the grading operations. Approximately 4.5 acres of forested land will be impacted by construction activities for this Project;
- Surface waterbodies and wetlands were identified along the northern boundary of this site. Tennessee has sited the proposed facility outside of these wetlands and will maintain all temporary workspace a minimum of 50-feet from the edge of the wetland boundary. In addition, the proposed facility will be designed to ensure that these resources will not be impacted during operation of the facility. No portion of the proposed facility is located within protected shoreland as defined by the New Hampshire Shoreland Protection Act (RSA 483 – B);
- Cultural resource surveys have been completed at the site, and no cultural resources were identified within any areas to be affected during construction or operation of the compressor station;
- The entire parcel, with the exception of the existing ROW consists of forest/ woodland and forested wetland habitat types. The portion of the site containing Tennessee's existing 50-foot wide pipeline ROW consists of open land. The Tennessee property is located in an industrialized region of the Town of Pelham. The surrounding properties include Williams Scotsman (mobile office and portable buildings) to the west and a multi-tenant warehouse building to the south. A retirement community is located across Beaver Brook to the north

- Noise sensitive areas ("NSAs"), including residential and commercial properties, were identified within one mile of the site. ENSR has determined that The proposed compressor station will not create a noise nuisance condition and will be within the sound level limits as set by the FERC

2.3.1.2 Alternative Site 1 – Tennessee Pipeline Property

Alternative Site 1, identified as the Tennessee Gas Pipeline Property, is approximately five acres in size and currently contains Tennessee's existing MLV 270B1-104 as well as the existing pipelines. The parcel is located south of Route 128 in Windham, New Hampshire (See Figure 10-1 in Section IV). The majority of the site is forested and is abutted to the east by an electric transmission corridor and to the northwest and south by residential developments. No wetlands or waterbodies are located within the site. Tennessee identified this property as a potential alternative site primarily because it was already under the company's ownership. This location was rejected, however, because the property was too small to site the facility and was in significantly closer proximity to existing residential developments.

2.3.1.3 Alternative Site 2 – Nasau Road Property

Alternative Site 2, identified as the Nashua Road Property, is located off Nashua Road (Route 102) in Londonderry, New Hampshire (See Figure 10-1 in Section IV). Tennessee's existing 200 system pipelines cross the western side of site. This site is large enough in size to accommodate the compressor station and contains favorable topography. There are wetlands within the property; however they would not be impacted by the siting of a facility within the property. While a potentially viable alternative, this location is zoned by the town of Londonderry as commercial, and the acquisition cost of the property with the current zoning would result in an unacceptable rate for the customer's pipeline service. Therefore, Tennessee rejected this alternative as it would render the Project financially unviable.

3.0 EXISTING CONDITIONS

3.1 PROPOSED COMPRESSOR STATION SITE

The proposed Compressor Station 270B1 will be located in the town of Pelham, Hillsborough County, New Hampshire (see Section IV – Figure 1-2a). Construction of the station will require approximately 6.8 acres within the 11.6-acre tract owned by Tennessee. The 6,130 hp station will be installed to increase the natural gas throughput of the existing pipeline by boosting the pressure of the natural gas up to the current maximum allowable operating pressure ("MAOP") of 750 pounds per square inch gauge ("psig"). The increase of pipeline gas pressure will be accomplished through the installation of one, 6,130 hp turbine driven centrifugal compressor (Solar Centaur 50L) unit. The turbo-compressor will be fueled by natural gas and equipped with a "lean pre-mix" dry low nitrogen oxide ("NOx") combustors to limit NOx, carbon monoxide ("CO") and particulate matter ("PM") emissions to less than BACT levels. The associated facilities include a unit control building, station maintenance / control building, an emergency electrical power generator, and a domestic gas building.

3.1.1 Location Map and Plot / Site Plans

Accompanying the Compressor Station 270B1 facility description are the following figures located in Section IV:

- Figure 1-2a (Site Location Map) shows the aboveground facility location on United States Geological Survey ("USGS") 7.5-minute series topographic maps at 1:24,000 scale.
- A site-specific plot plan of Compressor Station 270B1 is provided in Section VII. This plan shows the location of the proposed facility, construction workspace layout, and adjacent property owner information.

Tennessee proposes to design and operate the proposed compressor station using the same or similar techniques that have been applied to successfully design, construct, and operate its existing compressor stations in New England. Key elements of the Compressor Station design would be the installation of gas turbines incorporating Best Available Control Technology ("BACT") and the construction of a station that will be aesthetically compatible with the existing surroundings.

3.2 VEGETATIVE COMMUNITIES

The proposed compressor station will be located on an undeveloped parcel of land owned by Tennessee. The parcel is primarily forested with the exception of the maintained ROW associated with the existing pipeline. The upland forest type on the parcel consists of Appalachian Oak-Pine forest system, while the forested wetland associated with Beaver Brook consists of temperate minor river floodplain system (Sperduto 2005).

3.2.1 Appalachian Oak – Pine Forest System

Sperduto and Nichols (2004) define the Appalachian Oak-Pine Forest type as characterized by southern species that reach the northern extent of their ranges in southern and south-central New Hampshire. Oak forests appear to be fire dependent over long periods in other regions of the country, and repeated fire would tend to set back the successional stage of fire-sensitive species like beech and sugar maple (Sperduto and Nichols 2004). This vegetative community in the Project area includes white pine (*Pinus strobus*), white oak (*Quercus alba*), scrub oak (*Quercus ilicifolia*), red maple (*Acer rubrum*), and Eastern hemlock (*Tsuga Canadensis*). Shrubs include speckled alder (*Alnus rugosa*), shagbark hickory (*Carya ovata*), flowering dogwood (*Cornus florida*), and black cherry (*Prunus serotina*). Dominant species in the herbaceous layer include highbush blueberry (*Vaccinium corymbosum*) and cinnamon fern (*Osmunda cinnamomea*). Other herbaceous vegetation present includes starflower (*Trientalis borealis*) and poison ivy (*Toxicodendron radicans*).

3.2.2 Temperate Minor River Floodplain System

This system corresponds to hardwood dominated floodplains in central and southern New Hampshire including tributaries of the Merrimack River (Sperduto 2004). Red Maple Floodplain Forest communities dominate this system and are characteristic of the Project site. Soil surfaces in this community may be temporarily inundated during spring flood events, and hummock-hollow microtopography is absent or poorly developed (Sperduto and Nichols 2005). This vegetative community in the Project area is located directly adjacent to Beaver Brook and includes red maple, American elm (*Ulmus americana*), and white pine. Shrubs and saplings present include black cherry, red oak and speckled alder. Ferns present in the herbaceous

layer include cinnamon fern, marsh fern (*Thelypteris simulata*), and sensitive fern (*Onoclea sensibilis*).

3.2.3 Wetlands

Jurisdictional wetlands and waters of the United States are regulated by the United States Army Corps of Engineers ("USACE") pursuant to Section 404 of the Clean Water Act. Wetlands are the collective term for swamps, marshes, bogs, wet meadows, and similar areas that are often located between open water and dry land. Wetlands are often a valuable natural resource that, depending upon the specific characteristics, can improve water quality, reduce flood and storm damage, provide fish and wildlife habitat, and support outdoor recreational activities. Wetland investigations were performed in accordance with the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and classified according to Cowardin et al. (1979).

Prior to initiating field surveys, ENSR conducted desktop analysis of the Project area using the National Wetland Inventory ("NWI") database and the New Hampshire GRANIT Data mapper. The NWI maps depict all wetland types and sizes as interpreted from aerial photography and USGS quadrangle maps. Figure 2-5a located in Section IV of this application depicts the NWI and respective state wetland mapping in the vicinity of the proposed compressor station. Full-size NWI maps are provided in Section VII.

3.2.3.1 Wetland Resource Areas

In July 2007, ENSR environmental scientists delineated wetland and watercourse boundaries at the Project site. ENSR delineated one wetland complex within the 10 acre site. Wetland 1 consists of palustrine forested and scrub shrub ("PFO/PSS") components along the northeastern property boundary and is associated with Beaver Brook as previously described in Section 3.2.3. No construction is proposed within the wetland complex, and the proposed construction workspace will be located a minimum of 50-feet from the boundary of the delineated wetland. Please refer to the Wetland Delineation Report found in Section VI – Appendix A for additional information.

3.3 THREATENED AND ENDANGERED SPECIES

This section identifies and discusses the presence of federal and state-listed plant and animal species potentially located within, or in the vicinity of the Project area. It also identifies significant habitats such as designated critical habitats and rare plant communities known to occur within, or in the vicinity of the Project.

The federal government protects threatened and endangered species under the Endangered Species Act of 1973 ("ESA", 16 U.S.C.A. 1531-1543, P.L. 93-205). Section 7 of the ESA requires a federal agency to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of a federally-listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat of a federally-listed species. Significant habitats include areas designated by state, county, and local governments as valuable to fisheries, wildlife, and scientific research. The state of New Hampshire also has regulations to protect state-listed species and significant habitats. The following subsections summarize the status of clearances for the Project with respect to federal and state threatened and endangered species laws and regulations.

3.3.2 Federal Species

Consultation with the United States Fish and Wildlife Service concluded that no federally-listed and/or proposed endangered or threatened species or critical habitat under the jurisdiction of USFWS is known to occur in the project area (see Section VI – Appendix C).

3.3.3 State Species

Correspondence with the NH NHB which can be found in Section VI – Appendix C of this application, identified the potential presence of a state-listed freshwater shellfish species within Beaver Brook on the Project site (Coppola 2007a). Documented populations of the state-endangered freshwater mussel species, the brook floater (*Alasmodonta varicosa*), are known from Beaver Brook within approximately 1.5-miles of the Project property. As the Project does not involve alteration of wetlands or waterbodies associated with the Beaver Brook drainage system, no impacts to brook floater habitat are anticipated.

4.0 PROPOSED CONSTRUCTION ACTIVITIES

4.1 LAND REQUIREMENTS

Tennessee proposes to construct the new compressor station on a parcel of land measuring approximately 11.6 acres which is wholly owned by Tennessee. Within this area, approximately 4.2 acres will be fenced and will feature a new compressor building, a control/auxiliary building, a radio communication tower and other appurtenant facilities. A new permanent access road totaling approximately 1,000 feet in length will connect the facility to Industrial Park Drive. Construction at the facility will be accomplished using a workspace totaling approximately 6.8 acres (2.6 acres of temporary workspace including additional temporary workspace) within the 11.6-acre parcel. Two additional, temporary workspaces, each measuring 0.1 acres, will be located on both sides of the proposed access road at its intersection with Industrial Park Drive; these workspaces are designed to accommodate the broad turning radius of construction equipment for ingress and egress. The proposed facility will be located in an area where the adjacent properties are zoned as industrial and are characterized as open land. Following construction, the ground surfaces surrounding the facilities will be converted to gravel and maintained lawn to facilitate maintenance of a clear and accessible operational area.

Table 1 summarizes land acreage requirements for construction and operation of the compressor station.

TABLE 1 SUMMARY OF LAND REQUIREMENTS FOR COMPRESSOR STATION 270B1					
Facility	Size of Property Owned by Tennessee (acres)	Workspace During Construction (acres)	Land Affected During Operation (acres) ^c	TOTAL (acres)	TOTAL (square feet)
Compressor Station 270B1	11.6	2.6	4.2	6.8	296,208

^b All land affected during construction will also be utilized for operation of the compressor station.

4.1.1 Access Roads

Tennessee proposes to construct a new access road, approximately 1,000 feet in length and 15 feet in width, from Industrial Park Road along the existing ROW to the Compressor site. No temporary access roads are needed or proposed. The location and configuration of the proposed access road is indicated on the Project Plans found in Section VII of this application. Table 2 provides a description of the proposed access road.

TABLE 2 TEMPORARY AND PERMANENT ACCESS ROADS FOR THE COMPRESSOR STATION 270B1						
Access Road No.	New or Existin g	Temporary or Permanent	Milepost	Length (feet)	Width (feet)	Description
1	New	Permanent	N/A	1,000	15	Paved 15-foot wide private station road from Industrial Park Road to compressor station gate.

The proposed facility will be designed, constructed, tested, operated, and maintained to conform with or exceed federal, state, and local requirements including 49 C.F.R. Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards", 18 C.F.R. §380.15, "Guidelines to be Followed by Natural Gas Pipeline Companies in the Planning, Clearing, and Maintenance of Rights-of-Way and the Construction of Aboveground Facilities." In addition, Tennessee will comply with the FERC (2003) Upland Erosion Control, Revegetation and Maintenance Plan ("Plan") as contained in Section VI – Appendix D. A Spill Prevention Control and Countermeasure ("SPCC") Plan (Appendix E), and a Waste Management Plan (Appendix F) are also provided in Section VI and comprise the Construction Best Management Practices ("BMPs") for the Project.

4.2 CONSTRUCTION SEQUENCE

4.2.1 Clearing and Grading

The areas encompassing the site of the proposed compressor station and associated temporary construction workspace will be cleared of vegetation and graded as necessary to create level surfaces for the movement of construction vehicles and to prepare the area for the building foundations. Tennessee will leave all the trees that do not interfere with the safe construction and operation of the compressor facility. Clearing of the mature trees will include a 10-foot safety buffer zone around the fence line and access road for maintenance and security reasons. Tennessee will install silt fence and/or hay bales around disturbed areas, as appropriate, to minimize the potential for erosion and to prevent indirect impact to the wetlands and watercourse located outside of the construction workspace. Erosion and sediment controls will conform to the Commission's requirements and Tennessee's stormwater pollution prevention plans. The majority of the site of the proposed compressor station is situated on very deep, well-drained soils. As a result, Tennessee does not anticipate that blasting will be necessary to

prepare a level construction site. Such blasting, if required, will be conducted in accordance with appropriate regulations.

4.2.2 Foundations

Building foundations are likely to be constructed of poured reinforced concrete. Topsoil, if present, would be stripped from the area of the building foundations. Such soil may be used on-site either for landscaping or to provide soil cover for the septic system leach field, if acceptable. Additional soil or subsurface materials may be imported from approved sources to achieve the desired site/foundation grade.

4.2.3 Building Design and Construction

The compressor building is expected to be approximately 40 feet wide by 65 feet long with a roof peak to grade height of approximately 45 feet. The compressor building will house the 6,130 [nominal] horsepower natural gas fueled turbo-compressor package.

The proposed turbine exhaust stacks were initially designed with a stack height of 50 feet. Tennessee has performed air quality impact modeling to support its applications to the New Hampshire Department of Environmental Services ("NHDES") for air permits to construct and operate the proposed turbo-compressors. Air quality modeling reports were submitted to the NHDES as part of Tennessee's air permit applications. The modeling reports document that the proposed stack heights and other design parameters achieve acceptable dispersion of turbine exhaust emissions to comply with ambient air quality regulations and standards.

Typically, the steel frames would be erected first, followed by the installation of the roofs, interior skin, insulation and exterior skin. Cutouts for protrusions through the siding (e.g., inlet and exhaust vents) would be flashed to ensure that the buildings would be weather-tight. It is possible that Tennessee will construct the buildings using a steel frame, masonry walls and exterior sheet metal facade. This will be determined during the detailed design phase of the Project.

4.2.4 High Pressure Piping

Tennessee proposes to design and construct the high pressure piping to meet the requirements of the U.S. Department of Transportation ("DOT") 49 CFR Part 192 requirements. Tennessee proposes to design the high pressure gas piping in the station yards for a MAOP of 1,480 psig. Tennessee proposes to coat the station piping for protection against corrosion.

4.2.5 Pressure Testing

Prior to placing the station in-service, Tennessee proposes to conduct pressure testing of the piping system. Tennessee proposes to conduct this test in accordance with applicable codes.

4.2.6 Infrastructure Facilities

The installation of the infrastructure facilities includes the various compressor and auxiliary equipment, piping, and other electrical and mechanical systems. Tennessee anticipates that new electric, telephone and domestic water utility lines will be installed at the site.

4.2.7 Control Checkout and Engine Startup

Before the new compressor unit is put into service, Tennessee proposes to develop and implement a station commissioning plan. Tennessee anticipates that the plan would include the checking and testing of controls and safety features including the emergency shutdown system, relief valves, gas and fire detection facilities, over-speed, vibration, and other on- and off-engine protection and safety devices.

4.2.8 Final Grading and Landscaping

Prior to construction, Tennessee will develop a plan for the final grading and landscaping of the site. This final grading and landscaping plan will be consistent with the FERC (2003) Plan for the restoration of uplands (see Section VI – Appendix D).

After the completion of construction and the start-up and testing of the new compressor unit, or as soon thereafter as weather and other conditions permit, Tennessee proposes to conduct the final grading and landscaping of the compressor station site in accordance with the above-mentioned plan.

4.2.9 Erosion Control Procedures

During the construction at the site, Tennessee will require its contractors to install and maintain appropriate erosion controls (e.g., silt fence and/or hay bales) to minimize the potential for erosion from construction of the facilities. The implementation of erosion control procedures will follow the FERC (2003) Plan. A copy of the FERC Plan is provided in Section VI – Appendix D (no exceptions or variances are proposed).

4.3 CONSTRUCTION SCHEDULE

Construction for the new compressor station in Pelham is scheduled to commence in the spring of 2009 with a proposed in-service date of November 1, 2009. Tennessee estimates that approximately 25 to 50 construction workers will be required for the construction of the facility. No additional workers will be required to operate the compressor station.

4.4 OPERATION AND MAINTENANCE

Upon completion of the construction phase, operation and maintenance will commence. Operation and maintenance of the new facilities will be performed by Tennessee's employees currently supporting the Company's system in the northeast and located out of a central operations center in Hopkinton, MA.

Tennessee will operate and maintain the proposed facility in accordance with the applicable safety standards established by the DOT [49 Code of Federal Regulations ("C.F.R.") Part 192]. The standards imposed are in accordance with the Natural Gas Pipeline Safety Act of 1968, as amended. Regularly scheduled maintenance will ensure that the proposed compressor station meets standard service requirements. Standard Tennessee operations at existing stations include activities such as calibration, maintenance and inspection of equipment, as well as the monitoring of pressure, temperature, and vibration data, and traditional landscape maintenance such as mowing and application of fertilizer, etc. Standard Tennessee operations currently also include the periodic checking of safety and emergency equipment and cathodic protection

systems. The compressor station will be marked and identified in accordance with applicable regulations. Liaison will be maintained with the public as well as with government agencies having jurisdiction over the compressor station. Overall, maintenance activities will be in compliance with requirements of the FERC (2003) Plan as well as other applicable regulatory requirements.

5.0 IMPACT MINIMIZATION AND RESTORATION

Various construction techniques have been incorporated into the project design to minimize impacts to the workspace during the construction process. A comprehensive erosion and sedimentation control plan has been developed for the proposed project to minimize avoidable impacts to nearby wetland and sensitive environmental resources. Additionally, Tennessee will adhere to the specifications and conditions as detailed within applicable local, state and federal environmental permits.

Tennessee will develop site-specific environmental requirements that will be part of the construction bid documents. These environmental documents will include the FERC (2003) Plan (with approved exceptions/variances), the FERC certificate conditions and other environmental permits and requirements received to date. During pre-bid meetings with construction contractors, Tennessee will communicate to prospective contractors the environmental requirements for this project. Pre-bid communication with contractors, combined with the proposed contents of the construction contracts will assist contractors to incorporate applicable requirements into their bids. If a contractor is in violation of an environmental requirement during execution of duties on the behalf of Tennessee, Tennessee will demand immediate correction of the problem, issue a stop work order if necessary, resolve any discipline issue with the contractor and make appropriate agency notifications as needed.

5.1 ENVIRONMENTAL INSPECTION

Tennessee would use at least one full-time Environmental Inspector during project construction. The Environmental Inspector would monitor construction activities to ensure compliance with the specifications of the FERC (2003) Plan and Procedures, all applicable federal, regional, state, and local environmental permits, site-specific construction and restoration plans or other mitigation measures and landowner agreements. Tennessee would conduct environmental training in advance of construction, and the Environmental Inspector would perform all duties specified in the FERC (2003) Plan. The level of training will be commensurate with the type of duties of the personnel.

Tennessee will be responsible for the selection, employment, training and guidance of the Environmental Inspector. The duties of the Environmental Inspector are to monitor and report on those activities designated within the environmental scope of work in the construction contracts and include aspects such as erosion control, re-vegetation, environmental permit compliance, threatened and endangered species protection and restoration.

5.1.2 Environmental Inspection, Monitoring & Reporting

Post-construction monitoring will be provided: (1) to alert the project manager to additional restoration activities that may be necessary; and, (2) to allow regulatory personnel to know when the project has met performance standards. Tennessee will monitor the compressor station site to ensure that revegetation of disturbed areas is successful and soil stability is maintained. Revegetation monitoring will entail the walking of the project area and examination of the areas that have been revegetated in terms of coverage of ground cover and documentation of areas that are in need of additional revegetation efforts.

These inspections will allow the identification of problems as they arise so that maintenance or remedial actions can be prescribed and implemented properly. During the construction phase of the project, inspections to check for erosion and sedimentation will be conducted immediately after completion of the final earth-moving activities and after heavy storms until the annual rye grass and herbaceous plants form a continuous cover. Based on the results of the vegetation monitoring, Tennessee will coordinate and conduct any additional revegetation measures that are deemed necessary.

6.0 STATE CODE COMPLIANCE

6.1 AVOIDANCE AND MINIMIZATION

The project has undergone an extensive alternatives analysis (See Section 2.0 of Narrative) and has been designed to minimize potential impacts to wetlands, water bodies and threatened and endangered species.

Tennessee has sited the compressor station and related workspace to minimize short-term, long-term and cumulative impacts to vegetative communities and will adhere to the Commission's Plan during construction and restoration activities. During siting of the compressor station, Tennessee has incorporated the following measures to minimize impacts to vegetative communities:

- Use of a site adjacent to existing commercial / industrial development;
- Revegetation of the temporary workspace areas with native plant species;
- Avoidance of wetland communities and the associated 50 foot regulated buffer.

The operation and maintenance of the compressor station is expected to have little additional impact after site clearing and restoration is completed. Maintenance would include surveillance of the compressor station and meter station compounds, which would be maintained to ensure access and comply with requirements of 49 CFR Part 192.

As previously noted, the Project does not involve alteration of wetlands or waterbodies associated with the Beaver Brook drainage systems, so no impacts to brook floater habitat are anticipated. No portion of the proposed facility is located within protected shoreland as defined by the New Hampshire Shoreland Protection Act (RSA 483 – B). Tennessee proposes to construct the Project in accordance with the FERC Plan and Tennessee's SPCC Plan to protect

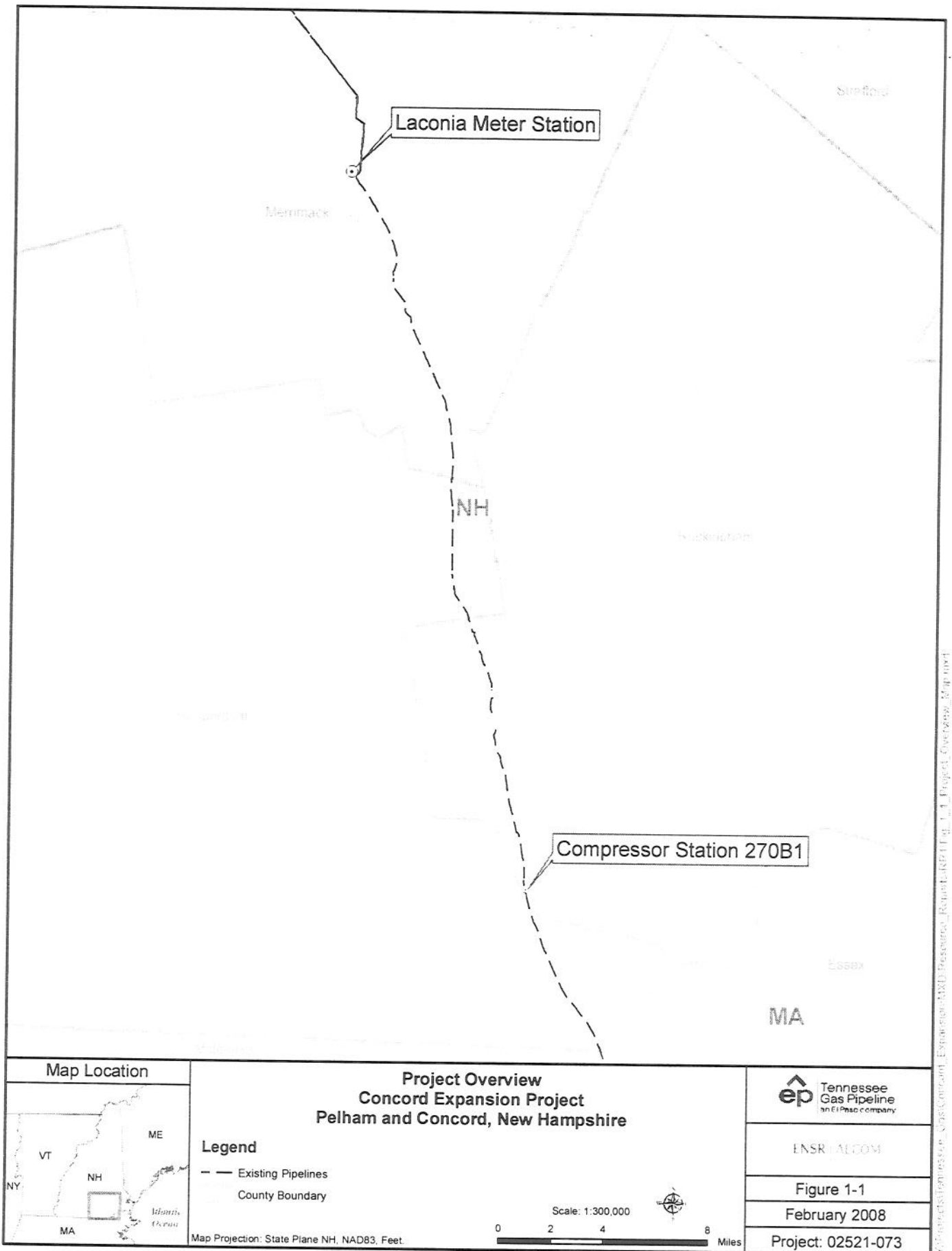
the off-site habitats of the State – endangered brook floater and other aquatic species associated with Beaver Brook.

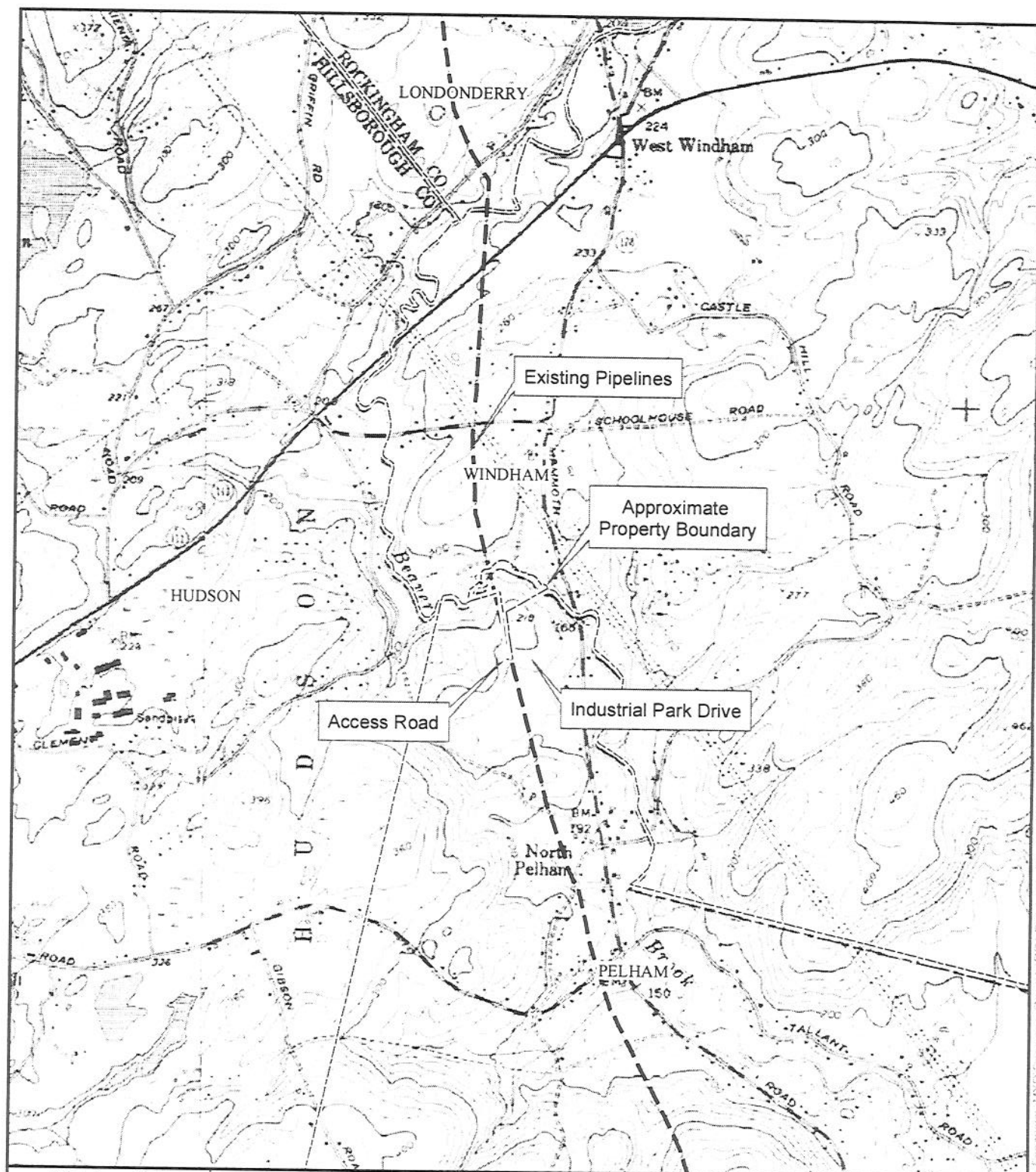
7.0 CONCLUSION

Construction of Compressor Station 270B1 will allow Tennessee Gas Pipeline Company to successfully implement the Concord Expansion Project. This new compression station would create an additional 30,000 dekatherms per day of capacity from Dracut, Massachusetts to Laconia, New Hampshire to serve the growth needs of the KeySpan/Energy North distribution system. The Project would benefit KeySpan's customers and New Hampshire citizens by providing incremental natural gas transportation in a safe and reliable manner. The project will comply with all applicable local, state and federal regulations. Impacts to wetland and wetland resource areas will be avoided as the compressor station has been sited in an upland location. A 50-foot vegetated no disturbance buffer will be maintained between the developed area and the sites wetlands. Immediately following construction activities disturbed locations will be permanently re-vegetation to stabilize the site and prevent future impacts to surrounding wetlands and surface waters.

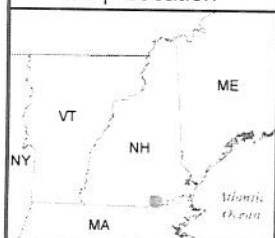
SECTION IV

FIGURES





Map Location



Site Location Concord Expansion Project Compressor Station 270B1 Pelham, New Hampshire

Legend

- Proposed Compressor Station Property Boundary
- Existing Pipelines
- Town Boundary

Map Projection: State Plane NH, NAD83, Feet
Image Source: USGS Topo Quad Windham and Nashua North NH.

Scale: 1:24,000

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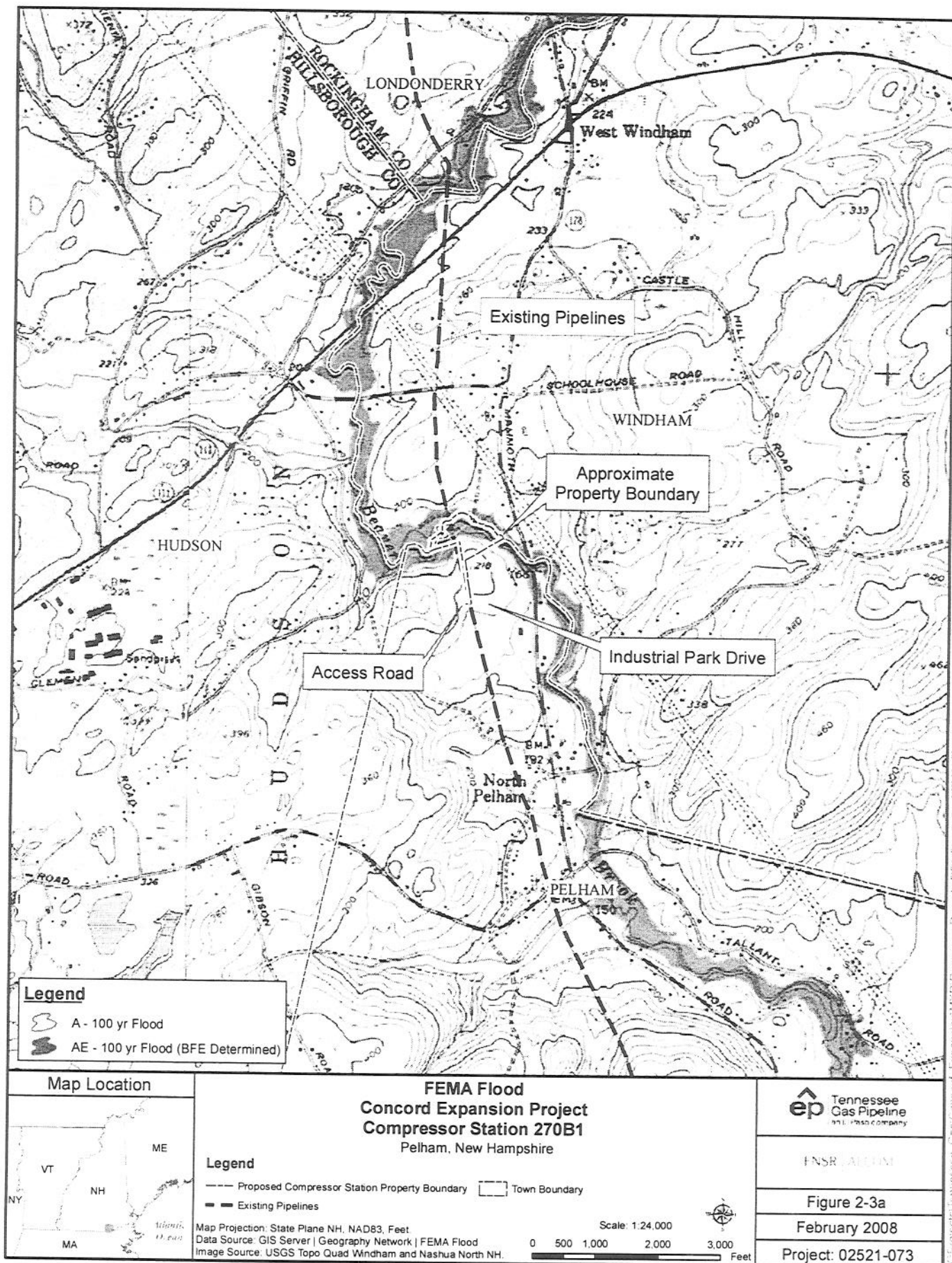
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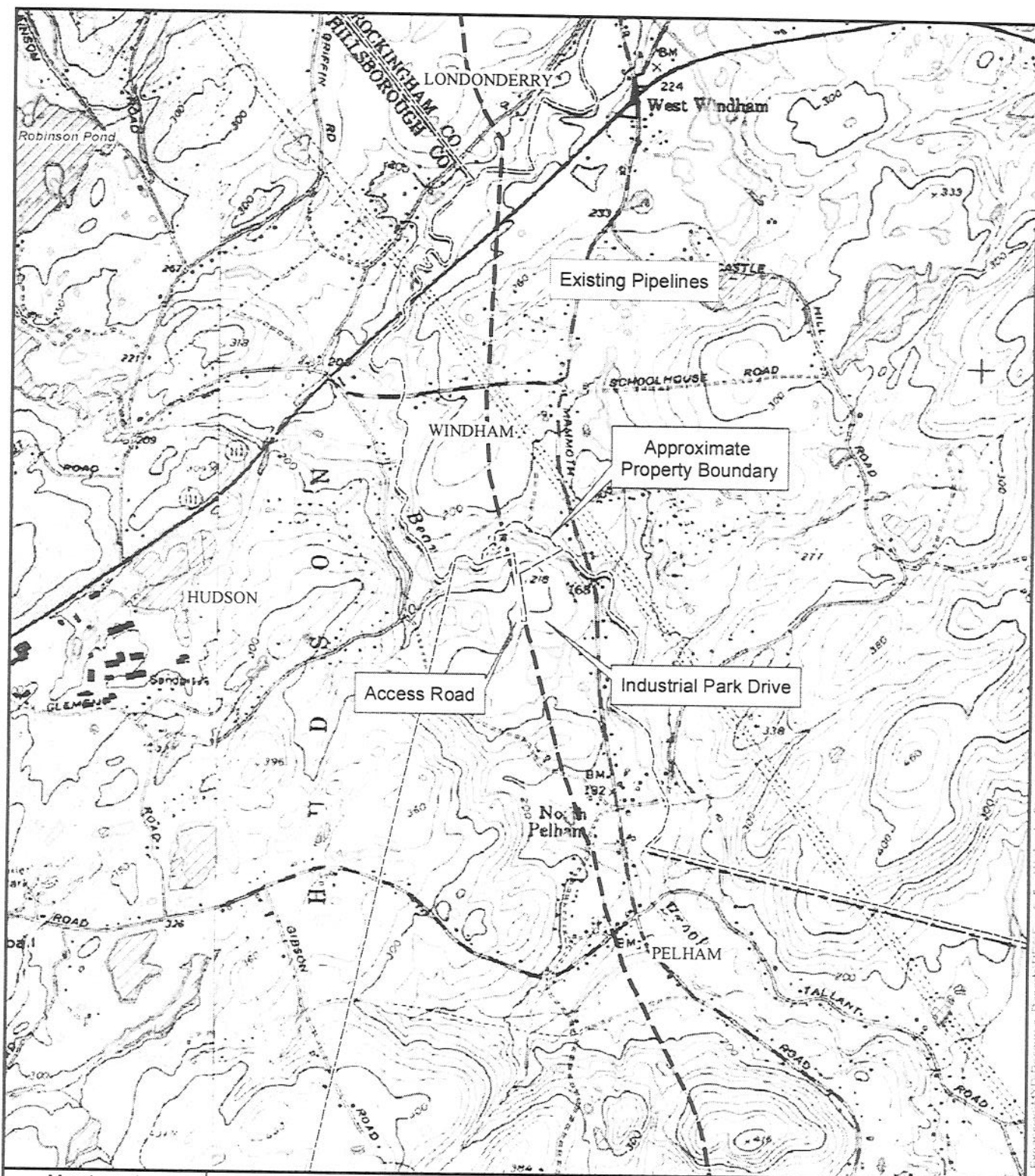
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Figure 1-2a

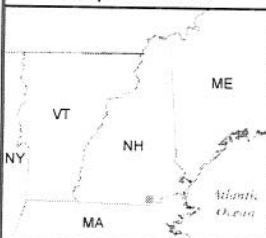
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Project: 02521-073





Map Location



Wetlands and Waterbodies Concord Expansion Project Compressor Station 270B1 Pelham, New Hampshire

Legend

- Proposed Compressor Station Property Boundary
- Existing Pipelines

- Waterbodies
- Stream / River
- NWI Wetlands
- Town Boundary

Map Projection: State Plane NH, NAD83, Feet
 Data Source: USFWS NWI and NH GRANIT
 Image Source: USGS Topo Quad Windham and Nashua North NH

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ep Tennessee
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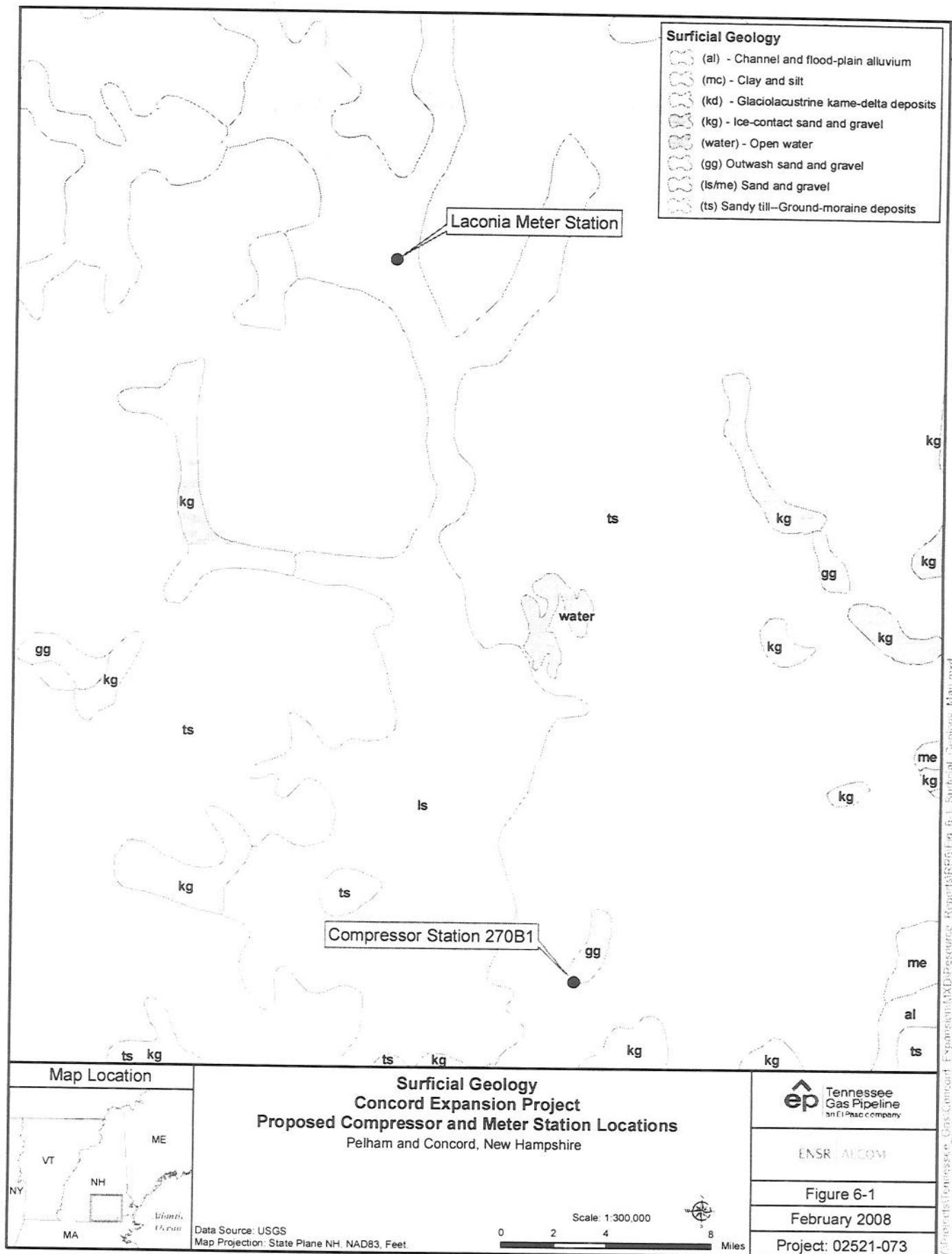
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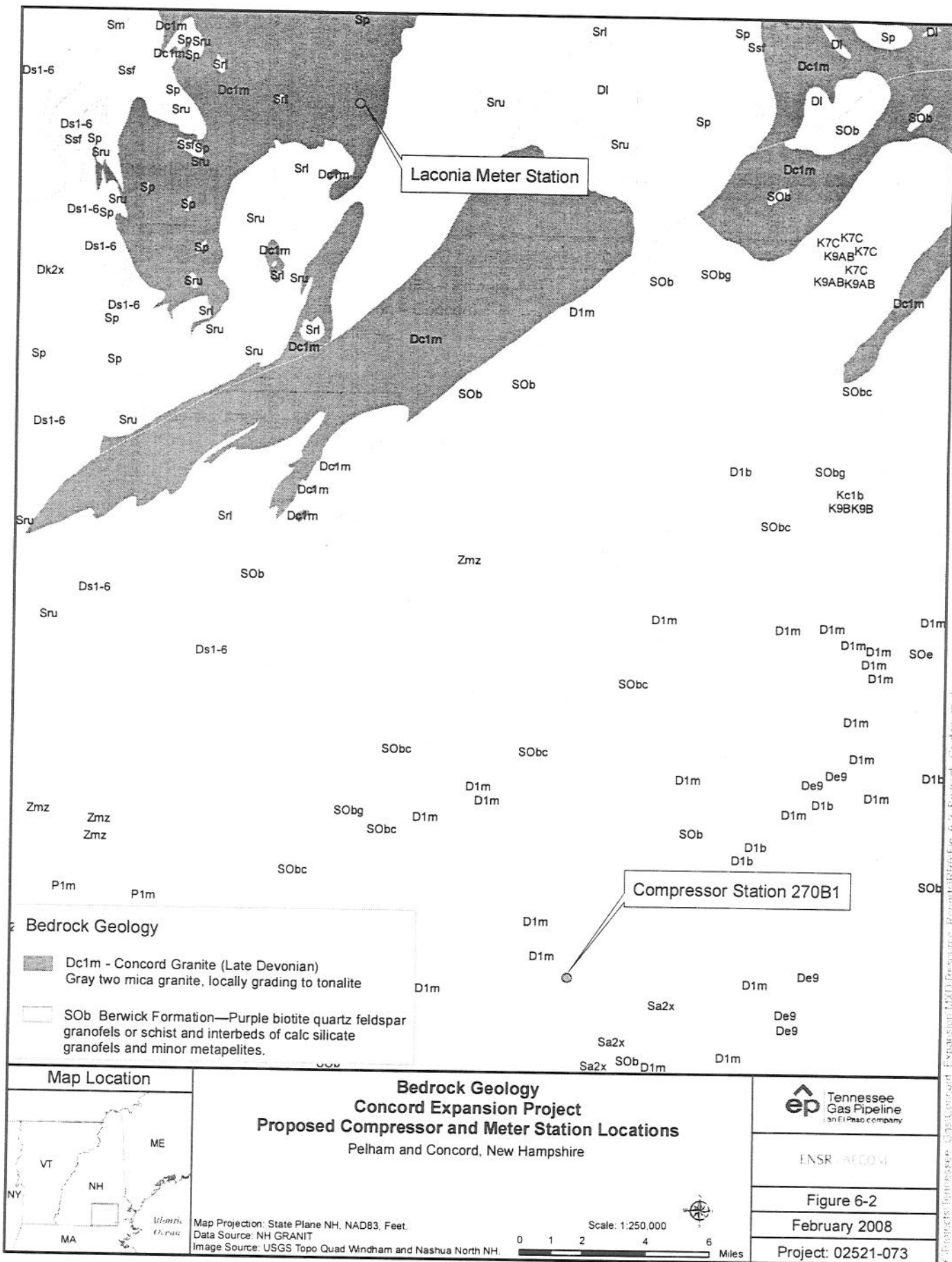
Figure 2-5a

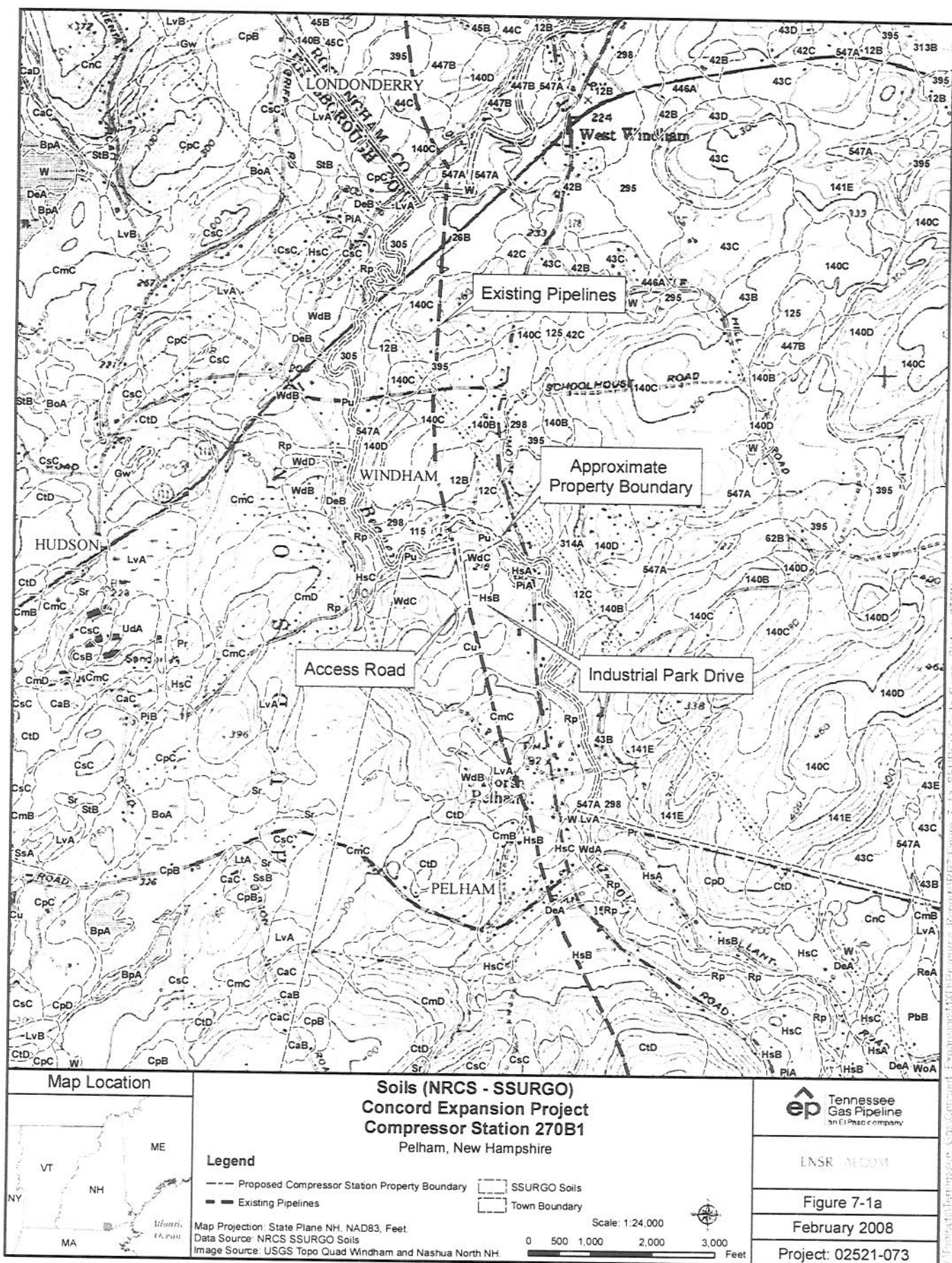
February 2008

Project: 02521-073

Projects\Tennessee Gas Conduit Expansion\Map\Figure 2-5a Wetlands Streams Comp Station 270B1.mxd







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SECTION V
FILING FEE INFORMATION

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FILING FEE STATEMENT

The project is reviewable under R.S.A. 485-A:17 – activities resulting in the alteration of terrain greater than 100,000 square feet (50,000 square feet if within the protected shoreland) and is therefore subject to filing fees under RSA 485-A:17. The proposed project will result in a total disturbance of 296,608 square feet outside of a protected shoreland. As stated by NHDES projects resulting in a disturbance greater than 200,000 square feet but less than 300,000 square feet require a fee of \$1,750.00

Summary

Treasurer State of New Hampshire – \$1,750.00

APPENDIX A

WETLAND DELINEATION REPORT